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THE CHROMATIC ABERRATION OF THE PULKOWA THIRTY-INCH REFRACTOR.

Since the paper on the "Chromatic Aberration of the Thirty-six-inch Equatorial of the Lick Observatory" was printed in No. 9 of these *Publications* (p. 160), a volume printed by the Pulkowa Observatory has been received.* It contains, among many other matters of interest, a description of the optical constants of the thirty-inch equatorial, by Dr. HERMANN STRUVE. The chromatic aberration of the objective was investigated by the spectroscopic method, and all colors between the lines D and b were found to have very nearly the same focus. For other parts of the spectrum the following results were obtained:

Line.	*Distance from D.*
C	$3.0^{\text{mm.}}$
F	6.4
$H\gamma$	32.9

From these observations the color curve of the objective can be drawn, although, as they give only four points on the curve, it is not possible to do so with entire accuracy. The curve appears to be quite similar to the curves of the Vienna and Mt. Hamilton equatorials, but shows a slight advantage of the Pulkowa refractor over these instruments, in regard to color correction. In the following table the chromatic aberrations of the three telescopes are compared, but since so few points are given on the curve for the Pulkowa refractor, no attempt has been made to extend the table to the values of λ given on page 164, *Publications* No. 9. The quantities entering in the table there given have been reduced to the units adopted by STRUVE.

LINE.	VIENNA TELESCOPE.		PULKOWA TELESCOPE,		LICK TELESCOPE.	
	df	$\frac{h}{f}$	df	$\frac{h}{f}$	df	$\frac{h}{f}$
	mm.		mm.		mm.	
C	2.7	.0000170	3.0	.0000115	5.3	.0000162
D	0.0	.0000000	0.0	.0000000	0.0	.0000000
F	6.0	.0000378	6.4	.0000245	11.4	.0000349
$H\gamma$	23.5	.0001478	32.9	.0001258	48.3	.0001471

In this table df is the difference in millimetres between the focal length for the stated line and the focal length for the D line; $\frac{h}{f}$ is the diameter of the circle in which the cone of rays from the object-glass intersects the focal plane for the D line, expressed in terms of the mean focal length. In the table on p. 164 the radius of this circle is given.

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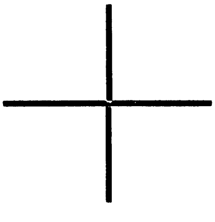
* *Zum 50-jährigen Bestehn der Nicolai-Hauptsternwarte.* St. Petersburg, 1889.

The color curves for these telescopes show a remarkable similarity when compared with the curves given by VOGEL* for a number of telescopes of older construction. This is no doubt due partly to the greater uniformity in the quality of optical glass as now manufactured, and partly to the more uniform practice of modern opticians. The rapid rise of the color curve at the upper end of the spectrum, corresponding to a great diameter of the circles of chromatic aberration for short wave-lengths, is considered rather advantageous than otherwise for visual observation, since a diffuse and dim background of false color is less offensive than a narrow but bright border around telescopic images. J. E. K.

SIMPLE METHOD FOR POINTING A PHOTOGRAPHIC TELESCOPE UPON A GUIDING-STAR DURING A LONG EXPOSURE.

In Dr. von KONKOLY'S *Praktische Anleitung zur Himmelsphotographie* (1887), pages 287, 288, 289, 290 are devoted to descriptions of different devices for the purpose named above.

A very simple and effective method, invented independently by Mr. SCHAEBERLE and Mr. BARNARD at the Lick Observatory, is to use a finder with a dark field in which two wires are disposed at right angles to each other, thus:



The wires must be heavy enough to be visible against a dark sky. The guiding-star is brought to the intersection of the wires and thrown out of focus. The circle formed by the star-disc thus diluted can be readily kept symmetrically bisected by the cross.

J. M. S. AND E. E. B.

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* *Monatsberichte der Akademie der Wissenschaften zu Berlin*, April, 1880.